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EXAMINER

WOODS, ERIC V

| | |
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| ART UNIT | PAPER NUMBER |
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2672

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/764,787 | Applicant(s) STAMM ET AL. | |
| | Examiner Eric V. Woods | Art Unit 2672 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>20040126</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Drawing two contains element 201 not mentioned in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Applicant is reminded of the duty to disclose under 37 CFR 1.56, and as part of that, MPEP 2001.06(b), third paragraph, clearly requires applicant to disclose all

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relevant and/or timely filed copending applications. Such applications must be noted in the specification, and applicant must amend the specification to include such applications that examiner has found, with specific ones set forth below. Specifically, applicant filed 10/764961, 10/764745, and 10/764622, which all appear to relevant subject matter, on the same day as the instant application.

Further, applicant is required to examine all co-pending applications filed by the present inventive entities, and determine which ones are relevant and disclose similar subject matter. Examiner **must** know these applications in order to make double patenting determinations, and applicant is expected to disclose such (see MPEP 2004).

The use of the trademark IEEE has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner that might adversely affect their validity as trademarks.

Claim Objections

Claim 11 is objected to because of the following informalities: on line 3, it reads, "edges a typographical..." This should clearly read, "edges **of** a typographical character. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 20 is a computer program product implementing the method of claim 1. Clearly, software implementing a method that clearly is intended to be computer-implemented is subject to the same rejection without further comment. Therefore, since the references applied teach a computer-implemented method that would be inherently taught by those references. Finally, it would be obvious that a software program for making a computer execute a set of instructions is very clearly running on such a digital computer.

In response to applicant's arguments, the recitations in the preamble of claim 20 that are different from that of claim 1 has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claims 1 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sander-Cederlof et al (US 5,500,927)('Sander') in view of Piper (US 5,760,787).

As to claims 1 and 20,

In a computing system that has access to a set of control points representing an outline of a graphical object, a method for simplifying the control data that represents the outline of the graphical object, the method comprising: (Again, preamble given no patentable weight, since it only recites an intended use – see specifics in *Hirao* as cited above)

-Identifying a plurality of local extrema on the outline of the graphical object; (Sander 2:20-57, where clearly the process identifies local extrema)(Piper clearly teaches that local extrema – e.g. corners – are identified (1:30-47) so that straight line segments are identified)

-Identifying a plurality of sets of local extrema, each local extremum in a set of local extrema being on a common edge of the outline of the graphical object, each set of local extrema including one or more local extremum from the plurality of identified local extrema; (Sander 2:20-57, where clearly these extrema are identified, and a path with local extrema is shown in Fig. 4 (see 4:10-15), see also 5:30-45. In 5:45-6:30, particularly 6:10-30, the groups of extrema are divided by the process into smaller sets (e.g. a curve segment with local extrema is subdivided into multiple segments and this sort of thing, where clearly a curve segment constitutes a 'common edge of the outline of a graphic object,' since the object is defined by an outline, as in Fig. 4.) Further, these clear constitute a plurality of sets – e.g. the curve segments that make up the

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object are a plurality of objects, and these objects clearly have local extrema, and they are segmented accordingly, which clearly creates the recited plurality of sets of local extrema, since each set is subdivided after finding local extrema, which prima facie means that the parent sets must have contained a plurality of local extrema. Further, in Figure 7 and 7:40-57, it is clearly taught that a plurality of local extrema can exist within one segment and very clearly only one extrema is selected as representative since the multiple extrema fall within the user-defined tolerance band)(Also, Sander 6:38-52 clearly teaches that the number of points within a line segment is a design choice, which clearly means that multiple extrema can be included per set)

-Determining that control points interspersed between and/or at the local extremum of each set of local extrema are on the common edge of the outline; and (Piper clearly teaches the identification of control points on straight-line segments – see Figure 2, where the shown affine spline has two control points 15 and 16 that lie on the spline between end points 13 and 14 that are clearly extraneous and could be eliminated –see 2:25-40.)

-Generating simplified control data that represents an outline of the common edges of the graphical object. (Piper Figure 9 teaches that segments are evaluated and that where straight-line segments exist – e.g. the degenerated curves in Figure 6 for example – the intermediate control points are removed – see step 53, while for non-degenerated curved segments the intermediate control points are retained – step 52. As an example, see 2:40-60, where Figure 3 is discussed, where certain of the curved line segments have degenerated into straight line segments and as such, the

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intermediate control points are suitable to be removed. Clearly, this represents 'simplified control data' since the unnecessary curves are removed – see Abstract and 1:30-48.)(Sander Figure 7 clearly shows that multiple extrema can be within a tolerance band such that one is chosen as representative and the others are eliminated as extraneous – see 4:15-20 and 7:40-57)

Reference Sander teaches some of the limitations of the instant claim as set forth above, with the exception of certain details concerning how redundant control points are removed, which Piper teaches. The references are obviously analogous art since they are both directed to removing redundant control points from graphical objects as set forth in the instant claim. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Sander with Piper since Piper creates a file format with the reduced number of control points and splines, which clearly takes less memory than the standard files, which would obviously be an improvement of Sander (See Piper abstract, 1:30-45 for example).

As to claim 2,

The method as recited in claim 1, wherein identifying a plurality of local extrema on the outline of the graphical object comprises determining that the outline increases or decreases in the same direction at points adjacent to a point that is a prospective local extremum.

The Sander reference teaches this limitation in 2:10-40, where a local extrema is clearly defined to be a point in a curve with vertical or horizontal slope having portions of the path before and after the point positioned on the same side of a line tangent to the

point. Clearly, this meets the recited definition, and it would have been obvious to find local extrema this way, because an extrema is by nature indicated by a change in direction of a curve as specified above. Since only the primary reference is utilized, motivation and combination is incorporated from the rejection to the parent claim.

As to claim 3,

The method as recited in claim 1, wherein identifying a plurality of local extrema on the outline of the graphical object comprises identifying a plurality of local extrema on the outline of a typographical character.

In Sander 1:40-45, a piece of software is listed as being able to generate paths. That piece of software is Aldus® Fontographer, which is well known to one of ordinary skill in the art to be software that allows a user to create fonts, which clearly consist of typographical characters, and the outline of such a character is essentially what a TrueType™ font or an Adobe Postscript Type 1 font consists of – that is, control points that define splines for the outline and fill of such a character. Piper clearly teaches in 1:10-25 the example of the letter “A” for reduction in the number of control points required, which is clearly an outline of a typographical character. Both references therefore teach this limitation. Motivation and combination are taken from the rejection to the parent claim.

As to claim 7,

The method as recited in claim 1, wherein identifying a plurality of sets of local extrema comprises determining that each local extremum in the plurality of local extrema is within a specified tolerance of immediately adjacent local extrema.

Piper teaches the use of a tolerance band (e.g. Figure 7), Piper clearly sets forth that since a majority of local extrema (e.g. the "a plurality" recited in the claim) are in the same direction (e.g. points 703, 705, and 707 versus the minority of points 704 and 706), point 705 is chosen as the representative middle point (7:40-56). Motivation and combination are incorporated by reference from the parent rejection.

As to claim 8,

The method as recited in claim 7, wherein determining that each local extremum in a plurality of local extrema is within a specified tolerance of immediately adjacent local extrema comprises determining that each local extremum in a plurality of local extrema is within specified distance tolerance of immediately adjacent local extrema.

As stated in the rejection to claim 7 above, and as substantiated in Piper 7:40-56, local extrema must fall within a tolerance band **of each other** as shown in Figure 7 to constitute an "extrema run" as defined in terms of distance. Clearly, this meets the required definition (e.g. the specification sets forth that 704-706 are extrema run between 703 and 707, although a close look at Figure 7 will show very clearly that all five points **fall within the tolerance band**. Therefore, it is obvious that 704 is within a tolerance band of 703, and that is what triggered the extrema run classification. The rejection to claim 7 is herein incorporated by reference for motivation and combination.

As to claim 10,

The method as recited in claim 1, wherein generating simplified control data that represents an outline of the common edges of the graphical object comprises generating a reduced set of control points, the reduced set of control points

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representing the features of the outline without representing some variations that would otherwise be included in the outline.

Clearly, Piper teaches that various control points within an extrema run / tolerance band are eliminated as redundant, as set forth above in the rejections to claims 7, 8, and 9 and the like. Clearly, in Figure 7, if elements 704 and 706 are eliminated and only extrema 705 is retained, then these clearly constitute "variations that would otherwise be included in the outline" that are eliminated because the points are not exactly the same as the retained representative (middle) control point.

Motivation and combination are taken from the parent rejection.

As to claim 11,

The method as recited in claim 1, wherein generating simplified control data that represents an outline of the common edges of the graphical object comprises generating simplified control data that represents an outline of the common edges a typographical character.

The rejection to claim 3 is incorporated herein by reference. Clearly, as stated therein, the paths recited can be a typographic character. The claim is essentially a duplicate. The rejection to claim 7 is also incorporated by reference, since it teaches eliminating control points and generating a simplified output format (see also the rejection to claim 1).

Claim 4 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander in view of Piper as applied to claim 1 above, and further in view of Scola et al (US 6,714,679 B1) and Foley – as cited in Piper 2:20-25 (copies of the requisite pages are included).

A cubic Bezier spline is known in the art to consist of four control points (see Piper Fig. 1 and 2:10-25. These control points are then used to generate a curved line that consists of, and is representative of, three parametric cubic functions (see for example Foley 11.2, page 479). These cubic functions *prima facie* are of a higher order than 1, e.g. they have derivatives. Indeed, Foley on page 479 sets forth the parametric tangent vectors of the curves, which are *prima facie* the derivatives of the equations defining the cubic Bezier spline. Taking the derivative is well known in the art. Scola teaches taking the derivative of the angle of the local tangent along its length as in 4:6-10, and also taking the derivative of curvature to determine the boundary (see 10:53-61), also 12:31-52, which is clearly taught by Foley at the above-cited page, and which provides motivation. Further, since the tangent is by definition the value of the derivative of a curve at a point (one definition), then using the tangent would be obvious to one of ordinary skill in the art.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as unpatentable over Sander in view of Piper as applied to claim 1 above, and further in view of Martinez et al (US 5,319,358)('Martinez').

As to claim 5,

The method as recited in claim 1, wherein identifying a plurality of sets of local extrema comprises determining that a plurality of local extrema are oriented in at least a similar direction.

The relevant sections of the rejection of claim 4 (concerning Foley) are incorporated by reference. Citation of the reference is not required in the instant

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rejection because a) one of the references cited mentions the specific section of the Foley reference and b) it would be within the skill and knowledge of one of ordinary skill in the art at the time the invention was made to know and use the cubic Bezier splines and knowledge of their operation would thusly be prima facie a matter of obviousness. As stated earlier, it is well known in the art, as established by the Piper reference, to determine the orientation of the lines that are before and after a point (see the rejection to claim 2, which is herein incorporated by reference). Martinez clearly establishes in the abstract that components in similar directions are adjusted so that they will have the same size, and in 9:40-10:30 that similar adjustments are further made. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Sander and Piper with Martinez for the reasons set forth above, and further because Martinez assures ideal scaling in the diagonal direction (Abstract), which would obviously improve the system of Sander and Piper.

As to claim 6, this claim is similar to that of claim 5, the rejection to which is incorporated by reference, except that the plurality of local extrema are oriented in the same direction. This limitation is merely a more specific version of claim 5. That is, it would be obvious that since Piper teaches the use of a tolerance band (e.g. Figure 7), Piper clearly sets forth that since a majority of local extrema (e.g. the "a plurality" recited in the claim) are in the same direction (e.g. points 703, 705, and 707 versus the minority of points 704 and 706), point 705 is chosen as the representative middle point (7:40-56). Clearly, local extrema 703 and 707 fall within the tolerance band and indeed define it, such that they are also part of the extrema run as set forth in the claim even though

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this is not explicit. It would have been obvious to do so in order to determine the correct position of the extrema point taken as representative of the extrema run for the reasons set forth above (e.g. implementing majority rules functionality in such a scenario would be the easiest to implement from a software perspective (Occam's razor applies here)). Motivation and combination are also incorporated by reference from claim 5. Sander clearly teaches that local extrema are determined by measuring the change in position of local extrema, so that supports the above position.

As to claim 12,

The preamble is ignored, as explained in the rejection to claim 1 above. Clearly, Piper in Figure 7 identifies consecutive local extrema (703-707), as explained in the rejections above, where a path is clearly an outline. The rejection to claim 5 is incorporated by reference, which explains how the direction of the outline is determined at the points, immediately before and after the selected extrema, and in Piper (7:40-56) and Fig. 7, clearly the extrema are consecutive (e.g. 703-707). The final element of this claim is taught by the rejection to claim 7, wherein Piper has the specified tolerance as set forth, and also the tolerance band is defined around an extrema run, and that is not defined unless a second extrema (e.g. 704) is within the band of a prior one (e.g. 703) or the like. Lastly, the extrema in Piper clearly constitute first and second consecutive local extrema on the path / outline as in Figure 7.

As to claim 13, see the rejection to claims 3 and 11, which are incorporated by reference.

As to claim 14, see the rejection to claim 2, which is incorporated by reference.

As to claim 15, the same logic applies – further, Piper teaches that an extrema run is defined where consecutive extrema fall within the tolerance band, and further than an extrema is defined with respect to the points around, which clearly means that a second local extrema would be determined in the same manner as the first. The rejection to claim 2 is incorporated by reference.

As to claim 17, this is the same limitation as claim 5 above, and the parent rejection and the rejection to claim 5 are herein incorporated by reference.

As to claim 18, this is the same limitation as claim 8, and the parent rejection and the rejection to claim 8 are herein incorporated by reference.

Claim 9 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander in view of Piper as applied to claims 7 and 8 above, the rejections to which are herein incorporated by reference, in view of Lewis et al (US 4,696,707)('Lewis').

As to claim 9,
The method as recited in claim 7, wherein determining that each local extremum in a plurality of local extrema is within a specified tolerance of immediately adjacent local extrema comprises determining that each local extremum in a plurality of local extrema is within specified angle tolerance of immediately adjacent local extrema.

This claim is a duplicate of claim 8 with the slight difference that the tolerance band is defined as an angle tolerance rather than a generic 'specified distance'. The system of Lewis utilizes a tolerance band (like that of Piper) that is based on angle tolerance rather than distance per se (see 13:50-67) in a computer program for determining such things. This proves that the use of angle tolerances is old and well

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known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the systems of Piper and Sander with Lewis, because the use of angle tolerances are old and well known in the art, and Piper clearly teaches the use of Bezier curves in column 2, where those curves are known to consist of control points, which generate tangent functions, as is well known in the art (see the cited pages of Foley for proof of that), which are used to determine points of change based on the derivative – and a local extremum will clearly have a change in direction, as set forth in the previous rejections.

Claim 15 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander in view of Piper and Martinez as applied to claim 12 above, and further in view of Scola et al (US 6,714,679 B1) and Foley – as cited in Piper 2:20-25 (copies of the requisite pages are included).

A cubic Bezier spline is known in the art to consist of four control points (see Piper Fig. 1 and 2:10-25. These control points are then used to generate a curved line that consists of, and is representative of, three parametric cubic functions (see for example Foley 11.2, page 479). These cubic functions prima facie are of a higher order than 1, e.g. they have derivatives. Indeed, Foley on page 479 sets forth the parametric tangent vectors of the curves, which are prima facie the derivatives of the equations defining the cubic Bezier spline. Taking the derivative is well known in the art. Scola teaches taking the derivative of the angle of the local tangent along its length as in 4:6-10, and also taking the derivative of curvature to determine the boundary (see 10:53-61), also 12:31-52, which is clearly taught by Foley at the above-cited page, and which

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provides motivation. Further, since the tangent is by definition the value of the derivative of a curve at a point (one definition), then using the tangent would be obvious to one of ordinary skill in the art.

Claim 19 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander in view of Piper and Martinez as applied to claim 12 above, the rejections to which are herein incorporated by reference, in view of Lewis et al (US 4,696,707)('Lewis').

As to claim 9,

The method as recited in claim 7, wherein determining that each local extremum in a plurality of local extrema is within a specified tolerance of immediately adjacent local extrema comprises determining that each local extremum in a plurality of local extrema is within specified angle tolerance of immediately adjacent local extrema.

This claim is a duplicate of claim 8 with the slight difference that the tolerance band is defined as an angle tolerance rather than a generic 'specified distance'. The system of Lewis utilizes a tolerance band (like that of Piper) that is based on angle tolerance rather than distance per se (see 13:50-67) in a computer program for determining such things. This proves that the use of angle tolerances is old and well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the systems of Piper, Martinez, and Sander with Lewis, because the use of angle tolerances are old and well known in the art, and Piper clearly teaches the use of Bezier curves in column 2, where those curves are known to consist of control points, which generate tangent functions, as is well known in the art (see the cited pages of Foley for proof of that), which are used to determine

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points of change based on the derivative – and a local extremum will clearly have a change in direction, as set forth in the previous rejections.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric V. Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 7:30-4:30 alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 571-272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eric Woods
12 July 2005


JEFFREY A. BRIES
PRIMARY EXAMINER